

Taking a View: Corporate Speculation, Governance, and Compensation

CHRISTOPHER C. GÉCZY, BERNADETTE A. MINTON,
and CATHERINE M. SCHRAND*

ABSTRACT

Using responses to a well-known confidential survey, we study corporations' use of derivatives to "take a view" on interest rate and currency movements. Characteristics of speculators suggest that perceived information and cost advantages lead them to take positions actively; that is, they do not speculate to increase risk by "betting the ranch." Speculating firms encourage managers to speculate through incentive-aligning compensation arrangements and bonding contracts, and they use derivatives-specific internal controls to manage potential abuse. Finally, we examine whether investors reading public corporate disclosures are able to identify firms that indicate speculating in the confidential survey; they are not.

DERIVATIVE INSTRUMENTS CAN BE USED TO HEDGE market risk exposures or to speculate on movements in the value of the underlying asset. To hedge generally implies that the derivative position is taken with the intention of reducing risk. To speculate generally implies that the derivative position is undertaken with the primary intention of making a profit or increasing risk. Speculation has a pejorative connotation in the financial press, yet it is not clear that this reputation is deserved. In this paper, we explore whether speculation is an activity that is optimal *ex ante* but for which we should expect to observe some large negative outcomes *ex post*, or whether it is an activity that will decrease expected shareholder value to the benefit of agents of the firm, that is, whether it is evidence of an agency problem and governance failure.

The extant theoretical and empirical literature presents an abundance of evidence about why firms should, and do, use derivatives to hedge.¹ We know

*Christopher C. Géczy is at University of Pennsylvania. Bernadette A. Minton is at The Ohio State University. Catherine M. Schrand is at University of Pennsylvania. The authors thank Gordon Bodnar, Richard Marston, and Regina Risnychok and the Weiss Center for International Financial Research at the Wharton School for extensive administrative support and access to the survey data; Rudi Fahlenbrach, Andrew Metrick, and Geoff Tate for other data used in the paper; and Sam Byun, Myriam Chang, Wes Gray, Ari Hadida, Lisa Huong, Jiunjen Lim, Vicki Von Krause, Jarad Rosenberg, and Michelle Zhang for excellent research assistance. We thank an anonymous referee, Bill Ahearn, Ramji Balakrishnan, Robin Greenwood, Rob Stambaugh (the editor), and participants at the Western Finance Association meetings, Federal Reserve Bank of New York, University of North Carolina, University of Virginia (Darden), and University of Iowa for helpful comments and the Charles A. Dice Center for Research in Financial Economics and the Rodney L. White Center for Financial Research for financial support. We gratefully acknowledge the Caesarea Center award.

¹ See Stulz (2003) for a summary of this research.

relatively little, however, about corporations' use of derivatives to speculate. One reason is that information about derivatives use in publicly available financial statements is not sufficient to measure the extent to which firms use these instruments to speculate. We overcome this constraint by using survey data to identify speculators. By combining these survey data with data from other sources, we provide evidence about the types of firms that speculate, the extent to which they speculate, and the ways in which they monitor their speculative activities. Characterizing these basic features of speculators is an important step toward understanding why firms speculate and in turn the implications for firm value.

The 1998 Wharton School/CIBC Wood Gundy survey asks respondents "How often does your market view of [exchange or interest] rates cause you to actively take positions?" Possible responses are "Frequently," "Sometimes," or "Never." We define firms that respond "Frequently" as speculators. This definition of speculation has two noteworthy features. First, it is consistent with the type of speculation that concerns regulators and the public, namely, the active use of derivative instruments that is based on a market view. Thus, speculation as defined does not simply represent active trading by firms that have transaction cost advantages associated with economies of scale in trading; rather, it captures trades that are motivated by the firm's belief that it has information. Second, the survey question does not use the word speculation, which may have a pejorative connotation. It describes "taking a view" without a judgment about whether it is good or bad.

Together, the various findings in this paper are consistent with the following story. Firms are motivated to use derivative instruments to hedge. Once the fixed costs of a derivatives operation are in place, however, some firms extend these operations to include active trading based on a market view. Which firms choose to speculate? We investigate three features of the survey respondents that distinguish speculators from nonspeculators.

First, several individual pieces of evidence taken together suggest that speculators are more likely to believe they have a comparative information advantage relative to the market, and hence to view speculation as a positive net present value (NPV), that is, profitable, activity. Firms that frequently speculate on foreign currency (FX) rates have a greater percentage of operating revenues and costs denominated in foreign currency than nonspeculators. They also have more significant tangible operations located in foreign countries, based on indirect evidence from their FX hedging activities. These more extensive operations could provide a source of perceived expertise in the currency. The presence of extensive FX operations, however, does not explain speculation with interest rate (IR) instruments. Instead, IR speculators are more extensively involved in various IR-related hedging activities relative to nonspeculators. We find no significant overlap between the firms that frequently speculate with currency derivatives and those that speculate with interest rate derivatives.

Three points related to our characterization of the evidence are worth emphasizing. First, the relations described above suggest only that speculators believe they have an information advantage. Compelling evidence on the existence of

an information advantage must come from an analysis of the profitability of the activity, and the survey provides no profitability data. Second, the survey-based definition of speculation almost tautologically implies information-based trading because it is active trading based on a market view. Thus, the 7% of derivatives users in the survey that frequently engage in this activity are doing so because they believe they have an information advantage, as opposed to solely a cost-based advantage. Finally, the only (rational) explanation for firms to speculate other than a belief that it is profitable is that it is a pure risk-taking activity. Such risk-taking behavior may be optimal if, for example, the firm faces a convex investment opportunity set (e.g., Campbell and Krawiec (1999)). We find no evidence that frequent speculation is associated with incentives to “bet-the-ranch.” Convex incentives are significantly associated, however, with two proxies for sample firms’ other risk-taking activities, lower diversification, and higher stock return volatility. Thus, the sample firms that we identify as risk-seekers do engage in other risk-taking activities, but they do not appear to view frequent trading of derivatives based on a market view as a risk-taking activity per se.

Second, compensation arrangements distinguish derivatives users that extend their operations to include speculation. In particular, derivative users are more likely to speculate when the derivatives function is benchmarked against profits rather than risk management effects. Thus, for the managers at speculating firms, profitable speculation will (presumably) increase cash-based compensation such as bonuses, whereas purely risk-taking speculation will not. Firms also are more likely to speculate when the stock price sensitivity (delta) of the CFO’s firm-related compensation is higher, but the convexity (vega) of his options is not associated with speculation. These results also suggest that the speculating firms have compensation-related incentives that encourage speculation, but only if it is expected to be profitable. Further analysis of CEO compensation as a benchmark helps to interpret the CFO findings.

Third, governance mechanisms distinguish speculators from other derivatives users. Our analysis of governance mechanisms distinguishes two types: (1) mechanisms that are specific to the firm but not to an activity, and (2) activity-specific mechanisms. Firm-specific mechanisms such as incentive-aligning contracts can induce or at least allow managers to take specific actions that are not value-maximizing by themselves but that are optimal given incomplete or costly contracting. With respect to derivatives use, in particular, governance mechanisms might be designed, for example, to provide incentives to use derivatives because hedging is optimal. However, without further monitoring and control, access to derivatives allows for the possibility that managers will take excessive risks with these instruments. Internal controls are an activity-specific monitoring mechanism that can help complete the contracting process.

Our analysis suggests that frequent speculation is associated with weaker firm-specific governance mechanisms. Frequent speculators exhibit greater managerial power as measured by the Gompers, Ishii, and Metrick (GIM (2003)) broad governance index. The results are particularly strong when the proxy for greater managerial power is management’s ability to delay hostile takeovers.

Viewed in isolation, this result could be taken as support for the argument that speculation represents a governance failure if one believes that effective governance mechanisms are those that reduce speculation.

However, the association between speculation and firm-wide governance mechanisms should not be viewed in isolation. Frequent speculators appear to address the potential for agents with access to derivatives to take “excessive” risks by developing strong internal controls on derivatives activities. For instance, the speculating firms report their activities to the Board of Directors more frequently and on a regularly scheduled basis, they use more sophisticated valuation methods, they value their portfolios more frequently, and they are more likely to have stated policies that limit counterparty risk. Thus, while firm-wide governance mechanisms may encourage (or at least not discourage) derivatives use, in general, trading activities are monitored via internal controls.

Our final analysis takes advantage of the survey data to address whether market participants were likely able to discern the activities of frequent speculators from publicly available documents (e.g., 10-K filings). The results suggest that they were not. This finding is not necessarily evidence of accounting fraud because speculation, as we define it, may not meet the requirements for reporting under generally accepted accounting principles (GAAP). For instance, firms may consider actively taking positions based on a market view to be a nontrading activity or they may view it as immaterial. Nonetheless, whether we do not observe disclosure because the accounting rules do not require it, because firms are not implementing the rules properly, or because firms are fraudulently deficient in their reporting, the financial statements are not transparent with respect to the firm’s speculative activities. These findings are important given the recent rash of corporate scandals related to the financial reporting of off-balance-sheet assets. Moreover, they lend support to the use of survey data as an appropriate vehicle to examine speculation.

A question that naturally arises is whether speculation is an economically significant activity that warrants investigation. While significance is ultimately a matter of one’s perspective, the following details should be taken into account. In terms of the number of firms that speculate, 40% of the surveyed derivatives users indicate that they speculate, that is, actively trade based on a market view, at least sometimes, and 7% speculate frequently. A follow-up survey of the respondents we conducted in 2005 indicates that the numbers have not decreased since the original survey,² despite the transparency crisis of 2001 related to Enron’s alleged abuse of derivatives and the implementation of Statement of Financial Accounting Standards No. 133 (FASB (2001)), which was intended to increase transparency of derivatives activities. In addition, a recent global survey of 334 nonfinancial companies sponsored by Deutsche

² There were 21 respondents to the follow-up survey (6% of the 341 firms surveyed). Five respondents indicate that they speculate “frequently” in 2005, and five indicate that they speculate “sometimes.” These respondents include five of the original frequent speculators and two firms that indicated never speculating in the initial survey.

Bank finds that 48% of respondents actively take positions in currency markets based on a market view of exchange rates and 52% of respondents actively take positions in interest rate markets based on a market view of interest rates (Servaes and Tufano (2006a, 2006b, 2006c)). Thus, speculation, defined precisely as in our survey, continues to be a widely practiced activity.

In terms of the dollars involved in speculation, the survey is silent. Several academic studies suggest that the dollar significance of speculation is modest. This conclusion is based on indirect evidence that derivatives appear to be used primarily for hedging (Hentschel and Kothari (2001), Allayannis and Weston (2001)), or on mean and median measures of the extent of total derivatives use but not of speculation per se (Guay and Kothari (2003)). In addition, small-sample studies of speculation in the gold mining industry suggest that net profits from speculation are at best modest (Adam and Fernando (2006), Brown, Crabb, and Haushalter (2006)).

However, significant speculation-related losses, which represent only the lower tail of this activity's distribution of outcomes, suggest that a material amount of dollars are at risk. Between the passage of the Private Securities Litigation Reform Act of 1995 and the fourth quarter of 2000, four 10b-5 cases involved speculation; the alleged losses from these cases ranged from \$20 million to over \$400 million. Other highly publicized cases of derivatives-related losses include Banc One, Proctor and Gamble, Gibson's Greetings, and Barings Bank in the 1990s, as well as more recent examples such as Enron, Reliant Energy, EnCana Corporation, China Aviation Oil, and South African Airways. At the end of the day, the significance of speculation is that it can have a material impact on the firm, albeit with low probability, but these potential impacts are generally unobservable.

The paper is organized as follows. Section I discusses the survey, including its definition of speculation, and describes the survey respondents. Section II summarizes the financial characteristics of speculators and the nature of their derivatives-related activities. Section III describes speculators' compensation and Section IV summarizes their governance characteristics including internal controls. Section V provides a review of survey respondents' financial disclosures of derivatives activities. Section VI concludes.

I. The Survey and Its Definition of Speculation

Our data on speculation come from a confidential survey on derivatives use. The use of a survey is imperative because, as we document in Section V, the information in publicly available financial statements is inadequate to ascertain whether a firm is engaging in speculative activities. The survey, co-conducted by the Weiss Center for International Financial Research at The Wharton School and CIBC World Markets,³ was sent to 1,928 publicly traded nonfinancial firms

³ The survey is included in its entirety in the Appendix. Bodnar, Hayt, and Marston (1998) present response tallies and describe the basic results.

in October 1997 with a second mailing in March 1998.⁴ Although we do not know the name or position of the person that completed the survey, the 1998 survey was the third survey of its type and thus we expect that the respondents understand the questions and have sufficient knowledge to answer them.

The survey elicited 366 usable responses, which represents a 19% response rate. This response rate is greater than that for other surveys of corporate financial officers (e.g., 9% in Graham and Harvey (2001) and 12% in Trahan and Gitman (1995)). Our sample consists of 341 of the 366 respondents.⁵ The non-respondent sample contains 1,047 firms after eliminating those with missing Compustat data.

Table I shows that of the 341 sample respondents, 186 report using derivatives in response to the first survey question, "Does your firm use derivatives (forwards, futures, options, swaps)?" Of these 186, 161, and 157 report using currency and interest rate derivatives, respectively. Overall, the industry membership of the respondent sample is representative of the Compustat population, and in particular, there is no industry concentration among the frequent speculators.⁶

We use Questions 12 and 15b to identify speculators. These questions asked the following separately for FX and IR derivatives use:

How often does your market view of exchange rates [interest rates] cause you to. . .

- a. Alter the timing of hedges?
- b. Alter the size of hedges?
- c. Actively take positions?

Possible responses are "Frequently," "Sometimes," and "Never."

We define a firm as a speculator based on its response to part c of these questions. There are two attributes of part c that make it a reasonable definition of speculation. First, the word "active" is important, as it does not allow for confusion about whether *not hedging* is a form of speculation. Second, the questions specifically indicate that the cause for taking positions is a market view. Thus, this activity is distinct from frequent trading due purely to a transaction cost advantage (e.g., arbitrage). Specifically, we define frequent (sometimes) {non} speculators as those respondents that frequently (sometimes) {never} actively take positions based on a market view of either FX rates (Question 12, part c) or interest rates (Question 15b, part c). This definition identifies 102

⁴ The firms were randomly selected from the Compustat database of nonfinancial firms in 1994 to receive a similar survey. The sponsors updated the sample for the 1998 survey to include Fortune 500 firms that had not been selected in 1994 and to adjust for buyouts, mergers, and bankruptcies subsequent to 1994.

⁵ Eighteen firms are eliminated because the firms engaged in a merger after the survey was sent but before the end of fiscal year 1997, and hence it is not clear whether the premerger or postmerger entity completed the survey. Seven additional respondents are excluded because share price data are not available (five wholly owned subsidiaries, one firm that is not publicly traded, and one co-op), and thus the equity incentives for these firms are not clear.

⁶ We cannot disclose the exact industries of this group because of confidentiality concerns.

Table I
Summary Statistics on Derivatives Usage Survey

Summary statistics for responses to the 1998 Wharton survey of financial risk management by U.S. non-financial firms (Appendix).

	Respondents (<i>N</i> = 341)	Nonrespondents (<i>N</i> = 1,047)
<i>Number that report using derivatives:</i>		
FX forwards, futures, swaps, options, or other	161	NA
Interest rate forwards, futures, swaps, options, or other	157	NA
<i>Industry:</i>		
Agriculture and forestry	1	7
Mining, oil and gas exploration, and construction	27	50
Food, textiles, lumber, paper, and chemicals	80	233
Rubber, stone, metals, and heavy machinery	110	375
Transportation and communications	55	113
Wholesale durable and nondurable goods, retail, and restaurants	40	147
Financial services	3	4
For-profit services	18	96
Healthcare and social services	7	18
Governmental and quasigovernmental services	–	4
<i>Firm characteristics:</i>		
Total assets (\$ millions)		
Mean	6,027.51	2,663.21
Median	644.69	418.07
Std. dev.	24,197.08	9,157.02
Sales (\$ millions)		
Mean	4,765.15	2,682.00
Median	721.79	486.85
Std. dev.	13,878.24	8,322.81
Firm Size (\$ millions)		
Mean	8,522.96	4,240.96
Median	872.15	568.47
Std. dev.	29,443.80	14,141.36

firms that never speculate, 61 that sometimes speculate, and 13 that frequently speculate.⁷

Because “sometimes” can capture a wide range of frequencies, we examine the robustness of our results to an alternative rule for classifying the firms that sometimes take positions. According to this alternative rule, firms that

⁷ The group of 102 firms that never speculate includes firms that never speculate with both FX and interest rate derivatives, or never speculate with one type of instrument and did not answer the question for the other instrument. The 61 firms in the “sometimes” speculate group responded that they sometimes actively take positions in both FX and interest rate derivatives, or sometimes speculate with one type of instrument and did not answer the question for the other instrument or never speculated with the other. There are 13 firms that frequently actively take positions in either FX or interest rate derivatives. The remaining 9 firms of the 185 that answered that they use derivatives did not answer survey Questions 12c and 15bc about actively taking positions based on a market view of exchange rates and interest rates, respectively.

sometimes actively take positions and that evaluate the risk management function by *reduced volatility* relative to a benchmark (Question 21a) are classified as nonspeculators, and the remaining firms that sometimes take positions are classified as speculators. The logic is that if a manager's activities are consistent with the basis on which she is evaluated, then "sometimes" should be less frequent for the firms that evaluate risk management based on reduced volatility. This classification of derivative users moves 34 firms from the sometimes category to the speculator group, and moves 23 firms from the sometimes category to the nonspeculator group, leaving zero firms in the sometimes category.⁸ The results throughout the paper are robust to this alternative specification.

Again, we define speculators based only on their responses to part c of Questions 12 and 15b (actively taking positions) and not on their responses to parts a and b (altering the timing or size of hedges). Parts a and b use the word "hedges" to describe the activity, which might suggest that the activity of interest is part of a hedging program. Discriminant validity analysis confirms that survey respondents that actively take positions are distinct from those that alter the timing or size of hedges (parts a and b), which suggests that the use of part c only is appropriate. Of the firms that frequently alter the timing of their hedges, 67% also frequently alter the size of their hedges, while only 39% (44%) of the firms that frequently alter the timing (size) of their hedges also frequently actively take positions.⁹ In addition, firms' answers to part c, but not to parts a and b, are more consistent with their answers to survey Question 21, which asks how the firm evaluates its risk management function. When we use "actively taking positions" as the definition of speculation, almost 92% of the frequent speculators evaluate the risk management function based on profits (either absolute, relative to a benchmark, or risk-adjusted), while only 54% (60%) of the nonspeculators (sometimes speculators) use profit-based benchmarks. In contrast, if we were to define speculation as altering the timing (size) of hedges, 71% (79%) of the frequent speculators would be evaluated by profit-based metrics.¹⁰

Firms' answers to part c are consistent with their answers to other survey questions in ways that accord with our intuition about how speculators use derivatives. Of the firms that frequently actively take positions based on market views, 46.2% frequently reduce costs or lock-in rates based on a market view and 15.4% never do so (Question 15a, part d). In contrast, only 2.5% of the

⁸ Four of the sometimes speculators that did not answer question 21 are eliminated in these robustness analyses.

⁹ Cronbach's alpha for the set of answers to parts a and b is 0.82, versus 0.52 for the set of answers to parts a and c and 0.48 for the set of answers to parts b and c.

¹⁰ When we define profit-based metrics to include profits that are absolute, relative to a benchmark, or risk-adjusted, Cronbach's alpha for the set of answers to part c (actively taking positions) and Question 21 is 0.28. Alpha is negative for the set of answers to Question 21 and parts a and b (computed separately). The negative alpha suggests that respondents' answers to these questions are not ordered in the same conceptual direction. Defining profit-based metrics to include profits that are either absolute or relative to a benchmark, but not risk-adjusted, Cronbach's alpha for the set of answers to part c and Question 21 is 0.42, versus 0.08 for the set of answers to part a and Question 21, and 0.11 for the set of answers to part b and Question 21.

nonspeculators frequently reduce costs or lock-in rates based on market views while 52.5% say they never do so (both significantly different from frequent speculators at the 1% and 5% levels, respectively). In addition, 16.7% of the frequent speculators frequently transact in the currency derivatives market to arbitrage borrowing rates across currencies (Question 9) whereas only 2.5% of the nonspeculators report doing so (the difference in means is significant at better than the 5% level).

The frequent speculators also report greater concern about market risk and monitoring of derivatives results. Of the frequent speculators, 61.5% express a high level of concern about the market risk associated with their derivative activities (Question 4a, part c), while only 26.7% of nonspeculators express the same level of concern; the difference is statistically significant at the 5% level or better. None (7.7%) of the frequent speculators express no (a low level of) concern, compared to 8.9% (33.7%) for the nonspeculators. In addition, the majority (53.8%) of the frequent speculators express a high level of concern about monitoring and evaluating hedge results (Question 4a, part d) compared to only 24.8% of the nonspeculators, a difference that is statistically significant at the 5% level. In contrast, 7.7% of the frequent speculators express no or a low level of concern about monitoring and evaluating hedge results compared to 34.7% of the nonspeculators.

As in any study that uses survey data, the potential impact of a nonresponse bias must be assessed. Of particular concern is the possibility that speculators avoided the survey because they believed their use of derivatives would be viewed unfavorably given the pejorative connotation associated with speculation. However, two factors are likely to mitigate this concern. The survey inquires about derivatives use, which is a less pejorative term than speculation. Also, firms were given assurance that highly limited access would be granted to their responses.

Two response patterns suggest that the nonrespondents are likely to be firms that do not use derivatives and thus that are simply not interested in the survey. These firms do not create a significant bias given that our sample consists only of derivatives users. First, respondents are significantly larger than the nonrespondents. Prior research has shown a correlation between firm size and derivatives use (Stulz (2003)). As reported in Table I, the average book value of total assets for the responding firms is \$6,028 million compared to \$2,663 million for nonresponding firms. The average market value of the firm (*SIZE*), which is defined as the sum of the market value of equity, the book value of long-term debt, and the book value of preferred stock measured at fiscal year-end 1997, is \$8,523 for responding firms versus \$4,241 for nonresponding firms.¹¹ The averages and medians are statistically different for all three size measures. Second, early responders seem to be "more interested" derivatives users than

¹¹ Share price data for one firm traded on the OTC bulletin Board are from Bloomberg for the closest date to the firm's fiscal year-end, which was within 1 week. For a firm with three tracking stocks, *SIZE* is the sum of the market values of the three separate tracking stocks, and the book value of long-term debt, and the book value of preferred stock.

late responders, which implies that response timing, and by implication non-response, are related to degree of interest in the survey topic (Armstrong and Overton (1977)).¹² Of the early responders, 55% are derivatives users compared to 48% of the late responders. More importantly, 10 of the 13 frequent speculators (77%) were early responders, which suggests that these firms did not avoid the survey, but rather expressed interest. Thus, nonresponse bias should not affect our inferences.

II. Financial Characteristics of Speculators and Their Activities

This section characterizes the firms that use derivatives to speculate. The sample includes only the 186 survey respondents that use derivatives. The cost of speculating has a variable component, but it also has a significant fixed component related to maintaining personnel and equipment (Nance, Smith, and Smithson (1993)). If these fixed costs also relate to a firm's hedging activities, then conditioning the comparisons on derivatives use effectively holds constant the fixed costs of speculation.¹³

A. Financial Characteristics of the Speculators

Table II, Panel A reports univariate statistics for financial characteristics across three groups: firms that never speculate ($n = 102$), firms that sometimes speculate ($n = 61$), and firms that frequently speculate ($n = 13$). Theoretical explanations for optimal speculation motivate the variables that we examine (e.g., Smith and Stulz (1985), Campbell and Kracaw (1999), Adam, Dasgupta, and Titman (2004)).

The frequent speculators are significantly larger in terms of market capitalization than the sometimes speculators, and are larger (but not significantly) than the firms that never take a view. The groups are not significantly different, however, in terms of industry-adjusted size relative to the median firm in the industry (*I-SIZE*).

Frequent speculators also have significantly lower book-to-market ratios (*BM*) than firms that never or sometimes speculate. Note that we do not interpret this pattern as evidence that the frequent speculators have higher growth opportunities. *BM* captures, among other firm characteristics, the firm's involvement in off-balance-sheet activities, and it would not be surprising if speculation were correlated with off-balance-sheet activities. Moreover, the

¹² The survey was first sent to firms in October of 1997. We define early responders as the 62% of the surveyed firms that responded by the end of 1997 (97% were received by November 17). Late responders are defined as those firms that responded after the second mailing in March 1998. The latest response was received May 22; 96% of the late responses were received by April 28.

¹³ The nonusers are significantly different from the derivatives users; the differences are consistent with the results documented in Géczy, Minton, and Schrand (1997). In untabulated results, we repeat the multinomial logit analysis of this section with four categories: 0 = no derivatives use; 1 = derivatives use but never takes a view; 2 = sometimes takes a view; and 3 = frequently takes a view. The results are consistent with those reported in Tables II, IV, and VI.

Table II
Financial Characteristics of Speculators and Nonspeculators

Panel A presents financial characteristics of survey respondents. The S versus NS column (F vs. S) {F vs. NS} reports the significance level of a *t*-test comparing the mean values for the sometimes speculators versus the nonspeculators (frequent vs. sometimes speculators) {frequent vs. nonspeculators}. ** and *** denote significance at the 5% and 1% level, respectively. Panel B presents multinomial logit regression estimates of the relation between the likelihood that a firm frequently, sometimes, or never actively takes positions based on a view about currency or interest rates and financial characteristics. Δ Prob. measures the marginal change in the probability of being a nonspeculator, sometimes speculator, or frequent speculator resulting from a change in the independent variable. The marginal effects of the regressors on the probabilities are calculated at the means of the regressors across all available observations. *p*-values are for the marginal effect estimates.

Panel A: Univariate Analysis									
	Nonspeculators		Sometimes Speculators		S versus NS	Frequent Speculators		F versus S	F versus NS
	(N = 102)		(N = 61)			(N = 13)			
	Mean	Std. Dev.	Mean	Std. Dev.		Mean	Std. Dev.		
Firm size: SIZE (log \$MM)	8.3852	1.7057	7.5055	1.9475	***	9.0271	1.4937	**	
I-SIZE	22.8128	113.0809	8.9292	23.6553		14.9925	17.0109		
<i>Growth/Investment Opportunities</i>									
Average book-to-market ratio ^a	0.4720	0.4037	0.4495	0.4168		0.2948	0.0993	**	***
R&D expenses/sales	0.0260	0.0476	0.0224	0.0417		0.0537	0.0930		
<i>Short and Long-Term Liquidity</i>									
Quick ratio	0.3042	0.7233	0.3218	0.5816		0.1843	0.1750		
Interest coverage ratio ^b	8.9796	24.7384	7.0795	10.8613		7.3623	5.9248		
Long-term debt ratio	0.2958	0.1871	0.2343	0.1657	**	0.1656	0.0720	**	***
S&P debt rating ^c	7.4375	3.3747	7.9737	3.3731		7.0000	3.2193		
Panel B: Multinomial Logit Analysis									
	Nonspeculators		Sometimes Speculators		Frequent Speculators				
	Δ Prob.	p-value	Δ Prob.	p-value	Δ Prob.	p-value			
Constant	−0.6586	0.0076	0.7520	0.0018	−0.0935	0.2853			
Log(SIZE)	0.0713	0.0038	−0.0817	0.0008	0.0104	0.1890			
Book to market (Ave)	0.1409	0.1978	−0.1124	0.2763	−0.0285	0.6501			
Quick ratio (Ave)	0.0833	0.2151	−0.0320	0.6071	−0.0513	0.2607			
Debt/equity (Ave)	0.6659	0.0068	−0.4660	0.0511	−0.1999	0.0434			
Number of obs. (168)	98		59		11				

^aThe average book-to-market ratio is the book value of common shareholders' equity (total assets less total liabilities less outstanding preferred stock) divided by closing share price times common shares outstanding, averaged over the years 1995 to 1997. For two firms, we use 2-year averages over 1996 and 1997 to calculate BM, QUICK, and DE because 1995 data are missing. The results exclude a nonspeculator with an average BM = -0.001.

^bThe interest coverage ratio is defined as the ratio of 1997 pretax income plus interest expense to interest expense plus capitalized interest. The results exclude a sometimes speculator with an interest coverage ratio >1,000. The next highest interest coverage ratio for the sometimes speculators is approximately 50.

^cS&P bond ratings for 1997 are from Compustat (data item 280). They are renumbered consecutively from 1 (AAA) to 24 (D). Ratings on noninterest bearing debt are set to missing.

speculators in our sample of derivative users are not significantly different with respect to their R&D expenditures, as measured by the ratio of R&D (Compustat data item 46) to sales for 1997, which represents another proxy for growth opportunities.

Evidence of differences with respect to solvency is mixed.¹⁴ The groups of firms do not differ statistically on the basis of short-term liquidity as measured by the quick ratio (*QUICK*), which we define as the average ratio of cash and short-term investments divided by current liabilities over 1995 to 1997. The frequent speculators have significantly lower long-term debt ratios (average ratio of book value of long-term debt to *SIZE* over 1995 to 1997), which could indicate better long-term solvency. However, differences in S&P bond ratings and interest coverage ratios across the groups are insignificant.

In Panel B, we report estimates of the association between speculation and firm-specific financial characteristics from a multinomial logit (MNL) analysis. The dependent variable categories are that a firm never, sometimes, or frequently takes a view. The independent variables are the book-to-market ratio, *SIZE*, the quick ratio, and the debt-to-equity (DE) ratio.¹⁵ These variables represent proxies for growth/investment opportunities, firm size, short-term liquidity, and long-term solvency. Results using the other proxies for these constructs yield highly similar results.

Consistent with the univariate analysis, the only financial characteristics that emerge as significant covariates with speculation are firm size (+) and the DE ratio (−). The frequent speculators and the firms that never speculate are significantly larger than the firms that sometimes take a view. The nonspeculators have higher debt-to-equity ratios (marginal probability is 0.67, p -value = 0.01), while debt-to-equity ratios are negatively associated with the probability of sometimes speculating (p -value of 0.05) and of frequent speculation (p -value of 0.04).

Stulz (1996) offers one interpretation of the negative association between DE ratios and speculation. He contends that financial distress can mitigate other incentives to speculate because distressed firms are less likely to be able to sustain ex post negative outcomes. If higher DE ratios are an indication of distress, then firms with higher DE ratios are less likely to speculate, ceteris paribus. Of course, an equilibrium view of DE ratios might suggest that firms have high debt ratios because they can and it is optimal to do so, irrespective of their level of financial distress. Since firm size can proxy for a number of firm attributes and incentives, we provide no interpretation of the positive

¹⁴ We include commonly used liquidity ratios in the table. We examine a variety of other liquidity metrics, and the conclusions are the same. Following Lamont, Polk, and Saá-Requejo (2001), we calculate a large-sample version of Kaplan and Zingales's (KZ (1997)) measure of financial constraint for each firm and an industry-adjusted KZ measure using three-digit SIC codes. Following Géczy et al. (1997, 1999), we create an industry-adjusted S&P bond rating that increases with decreasing bond ratings. We create six variables that are versions of free cash flow, defined as operating cash flow less required investment, which is a combined measure of financial constraint and efficient scale. The proxies for operating cash flow and required investment include various combinations of net cash flow from operating activities, net cash flow from financing activities, share repurchases, cash dividends, cash flow from sales of PPE, capital expenditures, and net acquisition costs. The resulting variables are scaled by firm size (*SIZE*). The six measures are industry-adjusted relative to the median firm in the firm's three-digit SIC industry.

¹⁵ Firms' quick ratios and DE ratios are negatively correlated (−0.30).

association between firm size and speculation at this point in the paper, but we will return to this result later.

The patterns in the financial characteristics of the speculators are not consistent with “bet-the-ranch” theories of speculation, in which it is optimal for a firm that faces a convex investment function to speculate (e.g., Campbell and Kracaw (1999), Adam et al. (2004)). These convexity theories suggest that speculators should have (1) good growth opportunities, (2) a low efficient scale endowment, (3) low short-term liquidity, and (4) high costs of external finance. We find no evidence of a relation between speculation and either growth opportunities, as measured by book-to-market ratios or research and development expenditures, or short-term liquidity, as measured by the quick ratio. Speculation also is not associated with industry-adjusted firm size as a measure of efficient scale. The better solvency of the frequent speculators contrasts with predictions from the convexity theories that speculators would have a higher cost of accessing external debt capital, *ceteris paribus*.

B. Speculation and Other Firm Activities

We report three key findings about the association between speculation frequency and a firm’s involvement in other risk-related activities. The first finding is that firms that take a view using currency derivatives do not always frequently speculate with interest rate derivatives. Two-thirds of the FX speculators report that they only sometimes take positions in interest-rate derivatives (not tabulated). That is, firms tend to specialize in FX or IR speculation.

The second finding is that frequent speculators have greater *ex ante* exposure to the underlying rate. Firms that frequently speculate on FX rates have a greater percentage of operating revenues and costs denominated in foreign currencies relative to firms that never or sometimes actively take positions (Table III, Panel A). There is no such pattern, however, for the firms when categorized based on the frequency of their use of IR instruments (Panel B). The hedging activities of the firms that frequently speculate on FX rates suggest that the speculators are not simply making purchases and sales in foreign markets, but that they have operations located in foreign countries. Specifically, they are more likely to hedge foreign repatriations and translation of foreign accounting statements than firms that sometimes or never speculate with foreign currency instruments (Question 9). Having operations in foreign countries, rather than simply having transactions in foreign currencies, is more consistent with the notion that speculators believe that they have an information advantage. The IR speculators are more extensively involved in all types of IR-related hedging activities; they are more likely to swap from floating rate to fixed rate debt, to fix rates on new debt issues in advance, and to lock in rates (Question 15a).

The third finding is that speculation with derivatives appears to be a distinct activity from other “risk-taking” activities. One indicator of risk-taking behavior is firm focus, or lack of diversification (Coles, Daniel, and Naveen (2006)). The two proxies for firm focus are (1) a Herfindahl index of a firm’s

Table III
Activities of Speculators and Nonspeculators

Descriptive statistics of risk-related activities for firms that never, sometimes, and frequently actively take positions based on a view about FX or interest rates. The S versus NS column (F vs. S) {F vs. NS} reports the significance level of a *t*-test comparing the mean values for the sometimes speculators versus the nonspeculators (frequent vs. sometimes speculators) {frequent vs. nonspeculators}. The numbers presented for the Hedging Activities of FX and IR derivative users are averages of responses that are coded as {0 = N/A or never; 1 = sometimes; 2 = frequently}. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

	Nonspeculators	Sometimes Speculators	S versus NS	Frequent Speculators	F versus S	F versus NS
Panel A: Based on Frequency of FX Derivatives Use						
	N = 91	N = 35		N = 9		
% of operating revenues in foreign currency	21.74%	18.71%		37.78%	***	***
% of operating costs in foreign currency	18.59	15.43		34.44	***	***
<i>Hedging Activities</i>						
Hedge foreign repatriations	0.9011	0.8571		1.6250	***	***
Hedge contractual commitments						
i. On-balance sheet transactions	1.4607	1.1714		1.5556		
ii. Off-balance sheet transactions	0.8506	0.7143	**	0.7500		
Hedge anticipated transactions 1 year or less	1.1889	1.4706	**	1.5556		
Hedge anticipated transactions over 1 year	0.5843	0.8857	**	0.6667		
Hedge economic/competitive exposure	0.4432	0.5429		0.4444		
Hedge translation of foreign accounting statements	0.4713	0.3429		1.1111	***	**
Arbitrage borrowing rates across currencies	0.3678	0.4000		0.7778		**
Panel B: Based on Frequency of IR Derivatives Use						
	N = 81	N = 49		N = 6		
% of operating revenues in foreign currency	16.14%	17.60%		24.17%		
% of operating costs in foreign currency	13.98	14.20		21.67%		
<i>Hedging Activities</i>						
Swap from fixed rate to floating rate debt	0.6282	0.7272		1.0000		
Swap from floating rate to fixed rate debt	0.8642	1.0204	*	1.5000	**	***
Fix in advance the rate (spread) on new debt	0.5065	0.6739		1.2000	*	***
Reduce costs/lock-in rates based on market view	0.3896	0.7778	***	1.6000		**
Panel C: Based on Frequency of FX or IR Use						
	N = 93	N = 55		N = 12		
Return volatility	0.0211	0.0235		0.0173	***	**
Number of segments	2.5143	2.0256		2.1111		
Segment concentration ratio	0.7805	0.8371		0.7771		

concentration of sales in reportable segments, which is the segment sales from the largest segment (in terms of sales) divided by total firm sales in 1997,¹⁶ and (2) the number of reported segments at year-end 1997. Fewer segments and higher concentration ratios suggest a type of equilibrium risk-taking behavior. We also consider return volatility (*RETVOL*) as an ex post summary measure of risk-taking behavior (Agrawal and Mandelker (1987) and DeFusco, Johnson, and Zorn (1990)). We measure *RETVOL* as the standard deviation of daily returns for 1997 from CRSP.

Table III, Panel C reports that there are no statistically significant differences in firm focus across frequency of speculation. Thus, the firms that choose to speculate with derivatives do not also take risks through lower diversification. In addition, frequent speculators have significantly lower return volatility than the nonspeculators and sometimes speculators. This pattern is opposite from the pattern we would observe if speculation with derivatives were complementary to other risk-taking activities captured by *RETVOL*.

Moreover, when we classify the firms as low, moderate, and high risk-takers based on each of the three measures of risk-taking (two proxies for firm focus and *RETVOL*), we find that the high risk-takers are smaller and that they have higher R&D expenditures and worse S&P bond ratings than the low risk-takers (results not tabulated). These results indicate that measures of convex incentives, which as previously documented are not associated with derivatives speculation, are correlated with greater risk-taking in activities other than derivatives use. This combination of results supports the conclusion that speculators are not responding to the incentives of the “bet-the-ranch” theories of speculation.

C. Conclusions

The analysis thus far indicates that speculators: (1) are larger than nonspeculators; (2) tend to specialize in either FX or IR instruments depending on the extent and nature of the firm’s exposure to the underlying; (3) have low leverage; (4) do not differ from nonspeculators with respect to incentives to increase risk; and (5) do not engage in other risk-taking activities to a greater extent than do nonspeculators.

One explanation for speculation that is consistent with these findings is that firms speculate because they believe doing so is a profitable activity and not simply a risk-taking activity that provides upside potential. Firms might expect speculation to be profitable under two conditions: (1) if the firm believes it has superior information about FX or IR rates (Stulz (1996)), or (2) if it has a transactions cost advantage in trading. Our results cannot distinguish these two explanations, and both are likely to explain speculation to some extent. In assessing the relative plausibility of these explanations, the following should

¹⁶ We use the number of segments reported in 1997 under the segment accounting rules existing at the time. We do not use the number of segments reported for 1997 in the 1999 annual report under SFAS 131.

be taken into account. First, the survey specifically asks about taking positions “based on a market view.” The information advantage story requires a market view; a transactions cost advantage story does not. Second, firms tend to specialize in FX or IR trading, and they specialize in activities in which it is possible for the firm to believe it has an information advantage. However, economies of scale that generate a transactions cost advantage also could be specific to an underlying. Finally, the sample is conditioned on derivatives use. While firm size might be correlated with a transaction cost advantage in an unconditional sample because firm size is correlated with derivatives use, the evidence that size is correlated with speculation favors the transactions cost story less in our conditional sample.

The 1998 survey provides indirect evidence that suggests speculation is motivated by a belief that one has an information advantage, but it does not ask detailed questions that would allow direct investigation of this possibility. However, responses to the 2005 follow-up survey suggest that frequent speculators’ decisions to speculate are (and were in 1998) predicated, at least in part, on beliefs in an information advantage. Respondents indicate that their perceived sources of competitive advantage are (and were in 1998) largely associated with informational advantages gained from government or official sources, from informational advantages derived directly from trading in financial markets, from relatively lower costs of leverage, and from experience or skill in trading. Firm size/economies of scale, cost structure in the financial markets (execution costs, etc.), and informational advantages gained from operations such as product sales are generally ranked lowest among all possible choices, including an open-ended “other” category.

Unfortunately, the 1998 survey provides no indication of whether speculators make profits on this activity, as we would predict, if they have an information advantage. Hence, we cannot conclude that speculators actually have an information advantage in FX and IR markets. While the information advantage theory is commonly used to explain speculative behavior in commodity markets, it seems less plausible that firms have an information advantage in interest rate and FX markets. Even for commodity markets (i.e., gold), however, empirical evidence suggests that the average profits of speculating may be low *ex post* (Adam and Fernando (2006), Brown et al. (2006)). Nonetheless, the theory is not that the firm has a superior information advantage, but only that it believes it has one.¹⁷

III. Speculation and Compensation

This section reports on the relation between speculation and compensation for both the CEO and the CFO.¹⁸ The CFO is generally charged with all treasury

¹⁷ Jorion (1995, p. 14) provides the following anecdote: “When asked, late in 1993, why he believed interest rates would remain low, Citron [Orange County Treasurer at the time of the derivatives debacle] replied: ‘I am one of the largest investors in America. I know these things.’”

¹⁸ See Murphy (1999) for a review of the extensive theoretical and empirical literature that links equity-based compensation to incentives for managerial decisions.

operations including risk management functions (Graham and Harvey (2001)) at both the highest strategic levels and often the operational level. Evidence from the follow-up survey also suggests that CFOs, not CEOs, make key decisions about speculation and are often solely responsible for forming a view that motivates derivatives positions.

A. Equity-Based Incentives

Many theoretical models make the intuitive prediction of a positive relation between option-based compensation and incentives for managers to take risks because stock price volatility increases call option values (e.g., Smith and Stulz (1985), specifically with respect to derivatives). Such models predict a positive association between the sensitivity of a manager's compensation to equity price volatility and speculation, even if speculation only increases the volatility of underlying firm value without a commensurate return to risk. There is some empirical evidence of a positive association between the sensitivity of a manager's compensation to (1) general measures of firm risk, such as return volatility or financial leverage (e.g., Agrawal and Mandelker (1987), DeFusco et al. (1990)); (2) specific risk-taking activities other than derivatives use, such as higher investment in R&D, less investment in property, plant, and equipment, and more focus on fewer lines of business (e.g., Coles et al. (2006)); or (3) investment in high-risk operating activities (e.g., oil and gas exploration, Rajgopal and Shevlin (2002)).

The empirical evidence, however, is not extensive and several recent papers question the conventional wisdom that executive stock options always provide incentives for increased risk-taking. Some models incorporate institutional aspects of executive behavior or of the markets for executive stock options (ESOs), which distinguish them from a liquidly traded call option, and provide conditions under which ESOs do not provide incentives for increased risk-taking (see, for example, Carpenter (2000)). Ross (2004) shows how simply considering stock options as part of an executive's entire compensation package can lead to a prediction of a negative relation between option-based compensation and incentives to increase return volatility.

Existing empirical evidence related specifically to derivatives use and compensation is mixed. In cross-sectional studies across broad samples of firms, there is little evidence that the use of derivatives—for hedging or for speculation—is greater for managers with more equity-sensitive compensation (see Géczy et al. (1997), among others). In the specific context of speculation, Brown et al. (2006) find no evidence that actively managed changes in the (gold market) hedge ratios of gold producers is connected to compensation proxies. There is, however, some early evidence of a positive association between *not hedging* with derivatives (as opposed to speculation) and compensation in industry-specific studies (see, for example, Tufano (1996), and Schrand and Unal (1998)).

We analyze the association between speculation with derivative instruments and two features of a manager's equity-based compensation, *DELTA* and *VEGA*.

These variables capture the sensitivity of a manager's wealth, received through compensation, to the outcomes of his decisions, in this case speculation. The first compensation measure, *DELTA*, is the sum of the deltas for exercisable and unexercisable options plus the delta of the manager's current shareholdings, where delta is based on the Black—Scholes option pricing formula as modified by Merton (1973) to account for dividend payouts. Thus, *DELTA* measures the sensitivity of the manager's firm-specific equity-based wealth to a 1% change in the firm's stock price. The second compensation measure, *VEGA*, is the sum of the corresponding vegas and measures the sensitivity of the manager's wealth to a 1% change in firm stock return volatility. Measurement of the variables follows the methodology and assumptions in Core and Guay (1999).¹⁹ The primary source of data is Execucomp supplemented with the hand-collection of missing items from proxy statements and CRSP.

Table IV, Panel A reports descriptive statistics of the compensation variables. The average wealth deltas of the CEOs range from 457.85 for the firms that sometimes speculate to 718.38 for the firms that never speculate. The average wealth deltas of the CFOs are significantly lower. The average vegas of the CEOs range from 90.47 for the firms that never speculate to 123.42 for the firms that frequently speculate. The vegas of the CFOs are again significantly lower. As a benchmark, the average delta for the Core and Guay (1999) sample of 5,352 CEO-year observations from 1992 to 1996 is 557.7, with a median of 117.4 and a standard deviation of 3,680.5.

Comparisons across the groups of speculators indicate that the CFOs of the frequent speculators (165.09) have statistically higher wealth deltas on average than those of the nonspeculators. The CFO vegas are also higher, but the difference is not statistically significant. The differences between *DELTA* and *VEGA* for the CEOs of the three groups are not significant.²⁰

Multinomial logit estimations that include the compensation variables and *SIZE* and *DE* are in Panel B. The point estimates of marginal probabilities associated with *SIZE* and the debt to equity ratio remain essentially the same as those presented in Table II. However, the debt-to-equity ratio is no longer a significant determinant of the likelihood of frequent speculation at standard significance levels.

The incentives of both the CEO and the CFO are associated with a firm's choice to speculate but in opposite directions.²¹ CFO wealth deltas have a

¹⁹ The *VEGA* of the shareholdings is assumed to be immaterial, consistent with Coles et al. (2006). When a firm has two different CEOs or CFOs during the year, we retain the one that was in that position longest. In one case, a new CFO started on July 1, 1997; we retained the CFO from the latter half of the year.

²⁰ We also examine the ages and tenures of the CEOs and CFOs. The average CEO of frequent speculators has been at the firm longer than the CEOs of the nonspeculators and of firms that sometimes speculate, but there are no other distinct patterns. See Gibbons and Murphy (1992) and Yermack (1995), for example, for theories on the relations between both executive age and tenure and equity-based incentives, and Stulz (1996) for a discussion of how these theories might apply specifically to speculation.

²¹ The results are similar when the model is estimated including either the CEO or CFO variables but not both.

Table IV

Equity-Based Compensation of Speculators and Nonspeculators

Panel A reports univariate comparisons of equity-based compensation variables across the survey respondents that never, sometimes, and frequently actively take positions based on a view about currency or interest rates. The S versus NS column (F vs. S) {F vs. NS} reports the significance level of a *t*-test comparing the mean values for the sometimes speculators versus the nonspeculators (frequent vs. sometimes speculators) {frequent vs. nonspeculators}. * denotes significance at the 10% level. Panel B reports multinomial logit regression estimates of the relation between the likelihood that a firm frequently, sometimes, or never actively takes positions based on a view about FX or interest rates and the equity-based compensation variables. Δ Prob. measures the marginal change in the probability of being a nonspeculator, sometimes speculator, or frequent speculator resulting from a change in the independent variable, calculated at the means of the regressors across all available observations. *p*-values are for the marginal effect estimates.

Panel A: Univariate Analysis								
	Nonspeculators (<i>N</i> = 102)		Sometimes Speculators (<i>N</i> = 61)		S versus NS	Frequent Speculators (<i>N</i> = 13)		F versus S versus NS
	Mean	Std. Dev.	Mean	Std. Dev.		Mean	Std. Dev.	
<i>Compensation Variables:</i>								
CEO wealth <i>DELTA</i>	718.38	1,486.71	457.85	610.92		601.91	502.85	
CEO wealth <i>VEGA</i>	90.47	82.72	91.19	100.29		123.42	130.46	
CFO wealth <i>DELTA</i>	78.89	101.68	102.63	114.79		165.09	144.15	*
CFO wealth <i>VEGA</i>	20.48	18.27	25.78	23.43		31.29	25.58	
Panel B: Multinomial Logit Analysis								
	Nonspeculators		Sometimes Speculators			Frequent Speculators		
	Δ Prob.	<i>p</i> -value	Δ Prob.	<i>p</i> -value		Δ Prob.	<i>p</i> -value	
Constant	-0.7662	0.0740	0.9151	0.025		-0.1489	0.392	
Log(SIZE)	0.1162	0.0433	-0.1256	0.023		0.0093	0.659	
Debt/equity (Ave)	0.8346	0.0510	-0.5063	0.217		-0.3283	0.162	
CEO wealth <i>DELTA</i>	0.0002	0.0789	-0.0001	0.487		-0.0001	0.058	
CEO wealth <i>VEGA</i>	-0.0031	0.0589	0.0024	0.106		0.0007	0.229	
CFO wealth <i>DELTA</i>	-0.0022	0.0977	0.0014	0.244		0.0009	0.072	
CFO wealth <i>VEGA</i>	0.0036	0.5291	-0.0021	0.693		-0.0015	0.523	
Number of obs. (83)	44		28			11		

positive marginal probability for frequent speculators (*p*-value of 0.072). Thus, the CFOs whose wealth is most sensitive to changes in firm value are more likely to actively take positions based on a view of rates. CFO vegas are not significant. In contrast, CEO wealth deltas have a negative marginal effect for frequent speculators (*p*-value of 0.058) and a positive marginal effect for nonspeculators (*p*-value of 0.059%). At the same time, CEO wealth vegas have a negative marginal probability for nonspeculators and a positive marginal probability for sometimes speculators. Thus, it appears that CEOs have incentives that contrast with those of CFOs with respect to risk-taking, results that are broadly consistent with the findings of Coles et al. (2006).

B. Other Compensation-Related Incentives

Table V provides evidence on the relation between speculation and nonequity-based compensation. The average annual bonus of the CEO (CFO) for the sample firms is \$782,000 (\$235,000). Bonuses represent approximately 42% (35%) of a CEO's (CFO's) cash compensation. Table V reports that bonuses are a more significant percentage of cash compensation for the frequent speculators. The bonuses of frequent speculators' CFOs are significantly greater than those of CFOs of the firms that sometimes speculate.

The benchmarks the frequent speculators use to evaluate their derivatives activities are different from those of other firms, also reported in Table V. Related to interest rate exposure, for example, none of the frequent IR speculators (six firms) evaluates management of the debt portfolio based on the reduction in interest expense volatility, which would be consistent with a hedging-related motive for using derivatives. By contrast, 15.9% and 10.2% of the nonspeculators and sometimes speculators, respectively, use this benchmark. The frequent speculators are more likely to evaluate management of the debt portfolio based on the impact on the cost of funds versus a benchmark. Related to foreign currency exposure, all of the firms that frequently speculate with FX derivatives (nine firms) use a benchmark and 44.4% (22.2%) of them speculate based on spot rates (forward rates). By contrast, 34.8% (21.9%) of the firms that never (sometimes) speculate have no benchmark.

Behavioral explanations for firm decisions, especially overconfidence, are becoming increasingly common in the literature (Heaton (2002)), and it may be natural to associate optimism (or overconfidence) with speculation based on having a market view on interest rates or foreign currencies. The results in Table V, however, do not convincingly suggest that managerial hubris—in the spirit of Tate and Malmendier (TM, 2004)—is associated with the likelihood of speculation. The TM measure for hubris is an indicator variable that equals one if a CEO holds an option on his company's stock until expiration (*LONGHOLDER*). TM argue that it is generally suboptimal for a CEO to hold an option to maturity unless the CEO is overconfident. The proportions of the *LONGHOLDER* CEOs in the frequent, sometimes, and nonspeculator samples are in the predicted direction in that *LONGHOLDER* is increasing in the frequency with which a firm takes a market view. The means, however, are insignificantly different from one another and are based on a small sample.²²

C. Conclusions

If the CFO is the most senior agent responsible for key decisions regarding actively taking positions, then the positive association between speculation and

²² We have the TM hubris measure for only four of the frequent speculators and only for the CEO. Managerial hubris does not emerge as a significant correlate of the probability of using derivatives to speculate in the multivariate analysis.

Table V
Compensation of Speculators and Nonspeculators

Univariate comparisons of compensation-related variables across the survey respondents that never, sometimes, and frequently actively take positions based on a view about currency or interest rates. The S versus NS column (F vs. S) {F vs. NS} reports the significance level of a *t*-test comparing the mean values for the sometimes speculators versus the nonspeculators (frequent vs. sometimes speculators) {frequent vs. nonspeculators}. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

	Nonspeculators (N = 102)	Sometimes speculators (N = 61)	S versus NS	Frequent speculators (N = 13)	F versus S	F versus NS
CEO: Bonus in thousands of dollars	\$945.72	573.55	**	\$830.04		
Bonus as a % of cash compensation	0.42	0.40		0.49	**	*
CFO: Bonus in thousands of dollars	\$260.61	175.46	*	\$390.29	*	
Bonus as a % of cash compensation	0.36	0.31	*	0.44	**	
% that evaluate the risk management function by:						
Reduced volatility relative to a benchmark	45.7%	40.4%		8.3%	***	***
Increased profit relative to a benchmark	16.3	24.6		66.7	***	***
Absolute profit/loss	14.1	19.3		16.7		
Risk-adjusted performance	23.9	15.8		8.3		
Benchmark for debt portfolio: ^a	n = 83	n = 50		n = 6		
None	38.3%	38.8%		50.0%		***
Volatility of interest expense	16.0	10.2		—	**	
Cost of funds versus market index	25.9	28.6		16.7		
Cost of funds versus duration-matched portfolio	6.2	12.2		33.3		
Cost of funds versus portfolio with specified ratio of fixed to floating rate debt	22.2	26.5		33.3		
Other	8.6	4.1		16.7		
Benchmark for FX activities:	n = 92	n = 35		n = 9		
None	34.8%	21.9%		—	***	***
Forward rates at beg. of period	23.6	40.6	*	44.4%		
Spot rates at beg. of period	18.0	15.6		22.2		
Baseline % hedged strategy	10.1	15.6		22.2		
Other	13.5	6.3		11.1		
	n = 31	n = 12		n = 4		
Hubris: LONGHOLDER	0.065	0.167		0.250		

^aMore than one can apply.

CFO *DELTA*s and between performance-based bonuses and speculation, combined with the *lack* of an association between speculation and CFO *VEGA*s, suggests that on average CFOs of speculators view speculation as a positive NPV activity, as opposed to an activity that increases volatility but is either zero or negative NPV. Responses to the follow-up survey indicate that the CFO, not the CEO, is indeed likely to be the manager who is responsible for the firm's decisions regarding actively taking positions. For example, every speculator who responded to our follow-up survey indicates that the CFO/Treasurer and/or staff within the financial function of the firm is responsible for forming views and none indicates that the CEO has a role.

In addition, the finding that the speculators' benchmark for FX derivatives is the item on which they are taking a view is consistent with the conjecture that these firms speculate because they believe it to be a profitable activity, not merely a risk-taking activity. If a manager believes she has superior knowledge about the spot rate, she would believe she can beat the benchmark, and compensation benchmarks can be set accordingly.

IV. Speculation and Governance Mechanisms

This section examines the relation between speculation and two sources of ex post monitoring. In Section A, we measure monitoring using a broad index that is firm-specific but not specific to the activity of derivatives use or speculation. The index is meant to capture cross-sectional variation in the extent to which the firms have mechanisms that bond an agent to act in the principal's interest, broadly construed. In Section B, we measure monitoring via internal controls. The distinguishing feature of internal controls relative to other mechanisms is that firms can tailor them to monitor derivatives use.

A. General Monitoring Mechanisms

We measure firm-wide governance mechanisms with the Gompers, Ishii, and Metrick (GIM (2003)) governance index. GIM and Fahlenbrach (2004) categorize 24-charter provisions, bylaw provisions, and other firm-level rules associated with corporate governance into five types: (1) tactics for delaying hostile bidders, (2) voting rights, (3) director/officer protection, (4) other takeover defenses, and (5) state laws. The overall index and the five component indices generally score one point for each provision that restricts shareholder rights or increases managerial power.²³ Thus, a higher index score represents greater managerial power (weaker shareholder rights). We do not take a stand on whether a high index represents "good" or "bad" governance. We assume only that the index is negatively correlated with the use of mechanisms that can bond an agent to act in the principal's interest. The GIM index is available for

²³ GIM adjust their measure for various opt-out or opt-in choices firms have relative to state laws dictating certain governance behaviors. We make the same adjustments.

Table VI
Governance of Speculators and Nonspeculators

Panel A reports univariate comparisons of governance indices across the survey respondents that never, sometimes, and frequently actively take positions based on a view about currency or interest rates. The S versus NS column (F vs. S) {F vs. NS} reports the significance level of a *t*-test comparing the mean values for the sometimes speculators versus the nonspeculators (frequent vs. sometimes speculators) {frequent vs. nonspeculators}. **denotes significance at the 5% level. Panel B reports multinomial logit regression estimates of the relation between the likelihood that a firm frequently, sometimes, or never actively takes positions based on a view about FX or interest rates and the governance indices. Δ Prob. measures the marginal change in the probability of being a nonspeculator, sometimes speculator, or frequent speculator resulting from a change in the independent variable, calculated at the means of the regressors across all available observations. *p*-values are for the marginal effect estimates.

Panel A: Univariate Analysis									
	Nonspeculators (<i>N</i> = 102)		Sometimes Speculators (<i>N</i> = 61)		S versus NS	Frequent Speculators (<i>N</i> = 13)		F versus S	F versus NS
	Mean	Std. Dev.	Mean	Std. Dev.		Mean	Std. Dev.		
Governance Summary Index	9.61	2.83	9.60	2.96		11.00	2.41		
Govs. Index: <i>DELAY</i> component	2.07	1.17	2.21	1.32		2.91	1.38		**
Panel B: Multinomial Logit Analysis									
	Nonspeculators		Sometimes speculators			Frequent speculators			
	Δ Prob.	<i>p</i> -value	Δ Prob.	<i>p</i> -value		Δ Prob.	<i>p</i> -value		
Governance Proxy: GIM Index									
Constant	−0.4624	0.124	0.6938	0.017		−0.2314	0.071		
Log(SIZE)	0.0654	0.022	−0.0740	0.008		0.0085	0.416		
Debt/Equity (Ave)	0.6484	0.015	−0.3892	0.129		−0.2592	0.020		
GIM Index	−0.0054	0.716	−0.0063	0.657		0.0118	0.067		
Number of obs. (142)	84		47			11			
Governance Proxy: <i>DELAY</i> Index									
Constant	−0.4539	0.093	0.6000	0.021		−0.1462	0.171		
Log(SIZE)	0.0685	0.018	−0.0730	0.009		0.0045	0.677		
Debt/equity (Ave)	0.6388	0.018	−0.3945	0.126		−0.2443	0.028		
<i>DELAY</i>	−0.0391	0.258	0.0121	0.717		0.0270	0.048		
Number of obs. (142)	84		47			11			
Includes Compensation Variables									
Constant	−0.7200	0.150	0.8009	0.092		−0.0809	0.646		
Log(Size)	0.1489	0.038	−0.1353	0.047		−0.0136	0.590		
Debt/equity (Ave)	0.7485	0.141	−0.4932	0.311		−0.2553	0.256		
<i>DELAY</i> index	−0.1085	0.095	0.0640	0.300		0.0445	0.117		
CEO wealth <i>DELTA</i>	0.0002	0.051	−0.0001	0.389		−0.0001	0.094		
CEO wealth <i>VEGA</i>	−0.0038	0.032	0.0030	0.061		0.0008	0.167		
CFO wealth <i>DELTA</i>	−0.0020	0.092	0.0012	0.296		0.0009	0.049		
CFO wealth <i>VEGA</i>	0.0038	0.521	−0.0019	0.726		−0.0018	0.369		
Number of obs. (72)	38		24			10			

84 of the 102 nonspeculators, 47 of the 61 sometimes speculators, and 11 of the 13 frequent speculators.

Table VI, frequent speculators have higher GIM indices (more control in the hands of management) Panel A, reports that than firms that never speculate. The component, on average, of the index that measures provisions that allow managers to delay hostile takeovers (*DELAY*) varies from 2.07 for nonspeculators to 2.91 for frequent speculators, a difference that is statistically significant at the 5% level. The delay provisions include staggered or classified boards on which directors serve in staggered terms, blank check preferred stock over which a firm's current board has substantial authority, limitations on the ability to take action via written consent, and special meeting provisions limiting or eliminating the ability of shareholders to call special meetings (causing them to wait for regularly scheduled meetings to disengage takeover defenses). GIM note that legal scholars such as Coates (2000) and Daines and Klausner (2001) suggest that the provisions captured by *DELAY* render the other defenses redundant. There are no significant differences among the groups for the other four components.

Table VI, Panel B, reports results of multinomial logit estimations that include the governance variables and explanatory variables found to be significant in previous analyses. While the results for *SIZE* and the DE ratio generally mimic those in Table II, the governance index emerges as an important explanatory variable. Its marginal probability for the frequent speculators is significantly positive (0.0118, *p*-value of 0.067), which suggests that speculating firms tend to be those whose shareholders have fewer rights.

If debt holders monitor managerial behavior (e.g., Harris and Raviv (1979), Diamond (1984, 1991), and others), the positive association between managerial power as measured by the GIM index and speculation is consistent with the negative relation between DE and speculation. Assuming lower DE ratios imply less monitoring, speculators face less monitoring by both creditors and takeover markets. While this result does not imply that *all* firms with weak corporate governance structures will speculate, or which of the 24 provisions embodied in the governance index are most influential, it strongly suggests that managers who speculate have less concern about the disciplining nature of the market for corporate control.

In a separate regression, *DELAY* significantly influences the likelihood of frequent speculating versus not speculating. The coefficient on the *DELAY* component is negative for the nonspeculators, although the *p*-value is not significant (0.258). The relation between *DELAY* and frequent speculation is positive and significant (*p*-value of 0.048). Corporate governance, as measured by *DELAY*, also retains a strong relation with the frequency of speculation when we include the compensation variables in the model. The relationships between all of the explanatory variables and the likelihood of speculation are similar to those presented previously in terms of both magnitude and significance. The only exception is that the coefficient on *SIZE* for the frequent speculators is negative. However, like the estimates when just the compensation variables are in the model (Table IV) or when just the

DELAY variable is in the model, this coefficient is not significantly different from zero.²⁴

B. Internal Controls

Table VII reports descriptive statistics about internal controls related to derivatives use. Overall, the speculators exhibit greater oversight of derivatives activities as evidenced by four key differences between the firms that actively take positions based on market views and those that sometimes or never do. First, 100% of the speculators have a centralized approach to managing the firm's risk management activities. The percentage of firms that use a centralized approach is lower (95%) for the firms that sometimes speculate and still lower (89%) for those that never speculate. The International Organization of Securities Commissions (IOSCO (1998)) report on risk management and control guidance associated with derivatives use indicates that a centralized approach may be desirable and that a decentralized approach may be ineffective especially for larger and more complex entities.

Second, speculators report on their activities to the Board of Directors (BOD) more frequently. Over 77% of the frequent speculators report derivatives activities to the BOD on a set schedule (monthly, quarterly, or annually). Firms that only sometimes take positions or never take positions report less frequently or have no set schedules. The greater centralization and more frequent reporting schedules of the speculators may also suggest that the speculators have more extensive and complicated derivatives activities that require such oversight.

Third, the frequent speculators deal with better counterparties on average. They never deal with counterparties rated BBB or lower, while between 1.9% and 3.6% of the sometimes speculators and between 6.7% and 10.5% of the firms that never speculate (depending on the instrument maturity) deal with BBB or lower counterparties. From an internal control perspective, the more important finding is that between 11.3% and 14.3% of the firms that never or sometimes speculate have no set policy regarding counterparty risk. All of the frequent speculators report that they have such a policy.

Finally, the frequent speculators differ from the firms that never or sometimes speculate with respect to portfolio valuation. The speculators value their portfolios more frequently. Almost one-third of the frequent speculators value their portfolios daily compared to only 8.5% and 19% of the sometimes and

²⁴ Several of the results presented up to this point can be used to examine the predictions of Brown and Khokher (2001). A rather broad and somewhat indirect implication of their model is that firms may invoke a view of market prices that are correlated with their core (industry-related) competencies. Our analysis thus far generally supports a correlation between a firm's "expertise" and speculation. However, the Brown and Khokher model also predicts a positive association between speculation and financial constraints as well as between speculation and managerial autonomy. The previously documented associations between leverage and speculation do not support this prediction. Moreover, the positive association between speculation and the GIM index, and in particular the *DELAY* component of the GIM index, is inconsistent with the prediction of Brown and Khokher (2001).

Table VII

Internal Controls of Firms That Frequently, Sometimes, or Never Speculate

Descriptive statistics of the internal controls for firms that never, sometimes, and frequently actively take positions based on a view about FX or interest rates. The S versus NS column (F vs. S) {F vs. NS} reports the significance level of a *t*-test comparing the mean values for the sometimes speculators versus the nonspeculators (frequent vs. sometimes speculators) {frequent vs. nonspeculators}. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

No.	Survey Question	Frequency of Taking a View				
		Never (<i>N</i> = 102)	Sometimes (<i>N</i> = 61)	S versus <i>N</i>	F versus S	F versus <i>N</i>
3	Risk management activities are: ^a					
	Primarily centralized	89.2%	95.0%		*	***
	Primarily decentralized; central coordination	9.8	10.0			
	Primarily decentralized	2.9	—	*	—	*
17a	% with a documented policy	83.8%	74.6%			
17b	Frequency of reporting to the BOD:					
	Monthly	4.0%	1.7%			
	Quarterly	21.2	16.9		*	
	Annually	22.2	13.6			
	As needed/no set schedule	44.5	62.7	**		
	Other	8.1	5.1		***	
18	Lowest counterparty rating					
	Maturities 12 months or less:					
	AAA	3.2%	10.7%	*		
	AA	20.0	19.6			
	A	49.5	51.8		*	*
	BBB	10.5	3.6	*	—	***
	Less than BBB	4.2	—	**	—	**
	No set policy/don't know	12.6	14.3		***	***
	Maturities more than 12 months:					
	AAA	5.6	11.3			
	AA	36.7	30.2			
	A	35.5	45.3			
	BBB	6.7	1.9			**
	Less than BBB	2.2	—			
	No set policy/Don't know	13.3	11.3		**	***
19	Frequency of derivatives portfolio valuation					
	Daily	19.2%	8.5%	*		
	Weekly	11.1	6.8			
	Monthly	27.3	30.5			
	Quarterly	22.2	27.1			
	Annually	2.0	11.9	**	—	***
	As needed/no set schedule	18.2	15.2			
20	Who values the portfolio (ranked 1, 2, 3)					
	Dealer that originated the transaction	1.85	1.64			
	Other dealer, consultant, or price vendor	1.96	2.16		*	
	Internal source	1.58	1.94	**	*	
6	Calculates "value at risk" for deriv. portfolio	41.2%	38.3%		**	*

^aThe percentages sum to more than 100% because firms can manage FX and IR operations differently.

never speculators, respectively. The frequent speculators also are more likely to use an internal source or outside dealers to value their portfolio rather than the dealer that originated the transaction, as evidenced by the significantly lower mean scores for these variables. In addition, the frequent speculators are significantly more likely to calculate value at risk measures for some or all of their derivative portfolios.

C. Conclusions

In summary, frequent speculators do not use contractual arrangements that bond them to stronger governance in general, at least as measured by the GIM index. However, frequent speculators address the potential that agents will abuse derivatives and take “excessive” risks through the implementation of specific controls related to derivatives use. Internal controls, such as bonding mechanisms, can reduce agency costs if a firm commits to them *ex ante*. The benefit of internal controls over more general contracting mechanisms, however, is that they can more readily be tailored to monitor specific actions in a timely and effective manner. This relative advantage is likely to be especially important for derivatives trading activities because of the frequency of the activity and the liquidity of the instruments.

V. Reporting of Speculative Activities

We review the financial footnotes in the fiscal year 1997 10-K filings for the survey firms that frequently take a view on interest rates or currency movements. The conclusion is that information in publicly available financial statements, which presumably meets the minimum disclosure requirements, is inadequate to ascertain whether firms are engaging in speculative activities. These findings are important on their own accord given the recent rash of corporate scandals related to the financial reporting of off-balance-sheet asset. In addition, they highlight the importance of using survey data, despite its limitations, in examining firms’ speculative activities.

A. Financial Statement Disclosures and the Minimum Disclosure Requirements

The accounting standard that established minimum disclosure requirements for derivative instruments in 1997 was Statement of Financial Accounting Standards No. 119, “Disclosure about Derivative Financial Instruments and Fair Value of Financial Instruments” (FASB (1994)). SFAS 119 required that firms distinguish between derivative instruments held or issued for trading purposes and purposes other than trading. For trading instruments,²⁵ firms were required to disclose separately for assets and liabilities the average fair

²⁵ The term trading is not unambiguous. GAAP applicable at the time defined trading purposes as: “... including dealing and other trading activities measured at fair value with gains and losses recognized in earnings.” (SFAS No. 119.) Also, derivative instruments that did not qualify for hedge accounting treatment were considered trading securities.

value during the period and the end-of-period fair value. They also were required to disclose net gains and losses during the period by class, such as FX or interest rates. For instruments held for purposes other than trading, firms were required to disclose, among other items, "A description of the entity's objectives for holding or issuing the derivative financial instruments, the context needed to understand those objectives, and its strategies for achieving those objectives." (paragraph 11.a). The standard encouraged firms to exceed these minimum requirements. SEC disclosure rules at the time of the survey (Regulation S-K, Item 305) also required firms to segregate trading and non-trading portfolios, where "trading" has the same meaning as in the accounting standards.

The firms that indicate speculating in the anonymous survey do not provide disclosures in their annual reports that would allow financial statement users to understand their speculative activities.²⁶ Six of the 13 firms state that they do not use derivatives for trading purposes, and 3 of these 6 also state explicitly that they do not use derivatives for speculative purposes. Five of the remaining seven firms that admit to speculating in the survey do not discuss trading or speculation in their disclosures. In fact, only 1 of the 13 firms discloses that it uses derivatives in minor amounts for trading purposes, and 1 other admits that it enters into certain transactions to create exposures. In no case do firms provide any kind of quantitative data related to this activity. Thus, for the firms for which we most expect to see a discussion of the use of derivatives for speculative purposes, the financial statements do not provide investors information that corresponds to the firm's activities. In most cases, the disclosures contradict the survey responses.

The disclosures about speculation do not appear to reflect the overall quality of a firm's disclosures. Analyst ratings of disclosure quality are available for 6 of the 13 frequent speculators.²⁷ Three of the six firms are ranked as relatively good disclosers within their industries; the other three are ranked as relatively poor disclosers. There is no consistent pattern between these rankings and the nature of the disclosures about derivatives.²⁸ In addition, all of the frequent speculators were audited by one of the Big-six public accounting firms in 1997 and they all received unqualified opinions.

The deficient disclosures with respect to speculation are not necessarily evidence of accounting fraud. Our definition of speculation is not part of GAAP, and firms may consider active position-taking based on a market view to be a

²⁶ When we describe footnote wording throughout this section, we do not quote the actual words in order to preserve the anonymity of the respondents. Our description conveys the spirit of the survey respondent's disclosure.

²⁷ The Association for Investment Management and Research (AIMR) provided disclosure quality scores for select firms—typically the largest firms—within industry groups through 1996. The AIMR ranked firms in three categories: annual and other required reports, quarterly reports and other published information, and investor relations.

²⁸ The firm that admits to "trading" is a good discloser, but the firm that admits that it "creates exposures" is a poor discloser. Two of the four firms that deny "trading" are good disclosers; two are poor. In addition, one good discloser and one poor discloser specifically deny "speculating."

“nontrading” activity.²⁹ In addition, while our speculators *frequently* take positions, GAAP requires disclosure of the positions only if they are *material*.³⁰ Nonetheless, whether we do not observe disclosure because the accounting rules do not require it or because firms are not implementing the rules properly, or because firms are fraudulently deficient in their reporting, the financial statements do not provide an accurate picture of whether the firm engages in speculation as we have defined it.

The opaqueness of the disclosures by the frequent speculators is somewhat inconsistent with their survey responses. In response to Question 4a, part f, 77% of the frequent speculators report a moderate or high degree of concern about the SEC disclosure requirements with respect to derivatives. This compares to 66% of the sometimes speculators and 67% of the firms that never speculate. In Question 4a, part e, 69.2% of the frequent speculators express a low level of concern about reactions by analysts or investors with respect to derivatives, whereas only 32.7% of nonspeculators express a low level of concern (the difference in means is significant at the 10% level or better). A high level of concern about the SEC but a low level of concern about other financial statement users should suggest that the frequent speculators would be more forthcoming in their financial statements than they are.

B. Financial Statement Disclosures Relative to Nonspeculators

In addition to assessing the frequent speculators’ disclosures relative to the minimum reporting requirements, we also compare them to the disclosures made by firms that sometimes and never speculate with derivatives. We examine the financial statements for a random sample of 25% of the survey respondents that indicated that they sometimes use derivatives to actively take positions (15 firms) and 25% of the firms that respond that they never use derivatives to actively take positions (26 firms). The comparison indicates that

²⁹ The two frequent speculators that responded to the follow-up survey indicated that they classify all derivatives positions that are actively taken based on market views as hedging instruments, consistent with the reporting of such positions in the annual report.

³⁰ GAAP defines material as follows: “The magnitude of an omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it probable that the judgment of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement.” (Statement of Accounting Concepts No. 2, FASB (1980, p. 10).) Case law interprets the GAAP definition of materiality. An omitted fact is material if a “reasonable shareholder” is substantially likely to consider it important (TSC Industries, Inc. vs. Northway, Inc., 426 U.S. 438, 1976; Basic Inc. vs. Levinson 485 U.S. 224, 1988). SEC versus Texas Gulf Sulphur Co., 401 F.2d, at 849 addressed the issue of materiality specifically for contingent or uncertain events such as potential losses from speculation, and concludes that the reasonable shareholder criterion “will depend at any given time upon a balancing of both the indicated probability that the event will occur and the anticipated magnitude of the event in light of the totality of the company activity.” The SEC echoes the definition of materiality from GAAP and emphasizes that numerical thresholds and rules of thumb for materiality are inappropriate; the facts and circumstances of the event/transaction, including the total “mix” of available information, should dictate materiality (Staff Accounting Bulletin {SAB} No. 99–“Materiality”).

there is no correspondence between the degree of speculation indicated by the survey responses and the revelation of speculative behavior in the financial statements. The disclosures across the groups are similar.

Only 1 of the 15 firms that sometimes speculate according to the survey discloses that it uses derivatives for trading purposes. The remaining 14 firms disclose that they use derivatives and mention hedging but do not use words such as “trading purposes,” “speculative purposes,” or “speculation.” Fourteen of the 26 firms (54%) that never speculate according to the survey explicitly state in their derivatives footnote that they do not use derivatives for trading or speculative purposes. The remaining 12 firms discuss hedging programs but do not use the phrases noted above. The high frequency of denials for this group is consistent with the unraveling models that predict full disclosure (Grossman (1981) and Milgrom (1981)).³¹ If managers believe that investors view speculative activities as unfavorable as characterized in the financial press, then firms that never speculate have incentives to report that they do not. Unfortunately, the statement is not credible given that an even greater percentage of the frequent speculators make similar denials.

Since the date of the original survey but before the date of our follow-up survey, the Financial Accounting Standards Board has promulgated SFAS 133, the new accounting standards for derivative instruments (FASB (2001)). The new standard significantly affects accounting practice—when and how value changes are recorded in the income statement and balance sheet—but does not significantly change footnote disclosure requirements with regard to qualitative information (U.S. SEC (2001)), which could lead to significant increased transparency of speculation. Recent empirical studies attempt to evaluate disclosures under FAS 133 (Bhamornsiri and Schroeder (2004), Kawaller (2004)). Without knowing the nature of the firm’s actual derivatives transactions, however, such studies are constrained to address whether the disclosures would be useful *in theory* or whether firms appear to be in compliance with the rules. Even with respect to such fundamental disclosure issues, these studies provide a negative characterization of the impact of FAS 133 on transparency.³²

VI. Conclusions

Our analysis characterizes corporate speculators. Using survey data, we define frequent (sometimes) {non} speculators as those respondents that

³¹ These studies predict full disclosure, even by firms with unfavorable private information. The firm with the “best” private information has incentives to disclose it, but that leaves the firm with the second-best private information to be pooled with the remaining firms. Hence, the second-best firm also discloses, and so on. This results in full disclosure by all firms except the one with the most unfavorable information.

³² For example, Bhamornsiri and Schroeder (2004) state that “As a result, financial statement users were not always able to evaluate the outcomes of these company’s strategies for using derivative financial instruments.” Kawaller (2004) states: “Whether by accident or by design, FAS 133 has done a poor job of creating greater accounting consistency in terms of how hedges are reported, because ‘special hedge accounting’ is applied—or not applied—in different ways among the population of derivative users.”

frequently (sometimes) {never} actively take positions based on a market view of either FX rates or interest rates. Of the 186 firms that report using either interest rate or FX derivatives, 102 firms never speculate, 61 sometimes speculate, and 13 frequently speculate. The frequent speculators are significantly larger than the sometimes speculators, and are larger (but not significantly) than the firms that never take a view. They also tend to specialize in FX or IR speculation, depending on the extent and nature of the firm's exposure to the underlying. Finally, frequent speculators do not differ from nonspeculators with respect to incentives to increase risk, and they do not engage in other examined risk-taking activities to a greater extent than nonspeculators.

One explanation for speculation that is consistent with these findings is that firms take positions based on a view (i.e., they speculate) when they believe doing so is a profitable activity, not simply to increase risk (upside potential) without commensurate return. While speculation could be profitable purely because speculators enjoy transaction cost advantages, the evidence also suggests that speculators likely believe they have an information advantage in either FX or IR markets.

Speculators and nonspeculators differ with respect to governance mechanisms. Frequent speculation is associated with weaker firm-wide governance mechanisms. However, firms that frequently speculate put internal monitoring mechanisms and controls in place to manage the potential abuse of the instruments. For instance, the speculating firms report their activities to the Board of Directors more frequently and on a regularly scheduled basis, they use more sophisticated valuation methods, they value their portfolios more frequently, and they are more likely to have stated policies that limit counterparty risk.

Finally, the survey provides a unique opportunity to evaluate the informativeness of a firm's financial reporting with respect to its derivatives use. We can compare survey responses to the data that are publicly reported. Without confidential survey data that reveals the "true" nature of the underlying transactions, it is impossible to evaluate the adequacy of the disclosures. However, the analysis suggests that using publicly available data, investors are not likely to be able to identify firms that speculate.

An important question is whether our characterizations of speculators generalize to the current time period. One could assert that the costs associated with speculation have risen since the date of the survey because it was taken prior to implementation of FAS 133 and prior to Enron's bankruptcy and other accounting scandals that refocused investor attention on corporate transparency and governance, especially with respect to derivatives. It is not clear, however, that the increased negative attention has increased the cost of speculation. The costs increase only if investors know that firms are speculating, and our results suggest that such information is not transparent in the financial statements. While the reporting standards continue to evolve, it is not obvious that the financial statements are any more transparent today than they were in 1998 with respect to speculation as we have defined it. In fact, representatives from one of the frequent speculators from 1998 privately suggest that some firms probably still speculate, but that they "rationalize" this activity differently today (Anonymous Firm (2004)).

Appendix: Survey Questionnaire
Wharton Survey of Financial Risk Management by U.S.
Non-Financial Firms

1. Use of Derivatives

1a. Does your firm use derivatives (forwards, futures, options, swaps)?
(Please circle the appropriate response.)

- a. Yes** **b. No**

*Please complete this section if you answered **NO** to question 1a.*

1b. Please indicate the three most important factors in your decision not to use derivatives.
(Please rank: 1 – Most important; 2 – Second most important; 3 – Third most important.)

- a. Insufficient exposure to financial or commodity prices
- b. Exposures are more effectively managed by other means
- c. Difficulty pricing and valuing derivatives
- d. Disclosure requirements of the SEC or the FASB
- e. Accounting treatment
- f. Concerns about perceptions of derivative use by investors, regulators and the public
- g. Costs of establishing and maintaining a derivatives program exceed the expected benefits
- h. Other

1c. What percentage of your consolidated operating revenues are in foreign currency?
(Please circle the response that is closest.)

- a. 0% b. 5% c. 10% d. 15% e. 20% f. 25% g. 30% h. 40% i. 50+%

1d. What percentage of your consolidated operating costs are in foreign currency?
(Please circle the response that is closest.)

- a. 0% b. 5% c. 10% d. 15% e. 20% f. 25% g. 30% h. 40% i. 50+%

Thank you. Please return your survey in the postage paid envelope.

2. Based upon the notional value of contracts, how does your firm's derivative usage compare to last year?
(Please circle the appropriate response.)

- a. Usage has increased b. Usage has decreased c. Usage has remained constant

3. Which of the following statements best describes your organization's approach to the use of derivatives to manage each of the following forms of risk? (Please indicate with a check in each column.)

	Foreign Exchange	Interest Rate	Commodity	Equity
Exposure not managed with derivatives				
Risk management activities primarily centralized				
Risk management decisions primarily decentralized with centralized coordination				
Risk management activities primarily decentralized				

- 4a. Indicate your degree of concern about the following issues with respect to derivatives.
(Please indicate your degree of concern with each issue by checking the appropriate box in each column.)

	No Concern	Low	Moderate	High
a. Accounting treatment				
b. Credit risk				
c. Market risk				
d. Monitoring and evaluating hedge results				
e. Reaction by analysts or investors				
f. SEC disclosure requirements				
g. Secondary market liquidity				

- 4b. Indicate the three issues of greatest concern from the list in question 4a.

(Please enter the letter from Question 4a for your three most serious concerns.)

	a	b	c	d	e	f	g	h
Most serious								
Second most serious								
Third most serious								

5. What will be the most likely impact on your firm of the FASB's new rules on derivatives accounting? (Please circle all that apply.)
- No effect on derivatives use or risk management strategy
 - A reduction in the use of derivatives
 - An increase in the use of derivatives
 - A change in the types of instruments used
 - Alter the timing of hedging transactions
 - A significant change in the firm's overall strategy or approach to risk management
6. Does your firm calculate "value-at-risk" for some or all of its derivatives portfolio?
- Yes
 - No

II. Currency Exposure

- 7a. What percentage of your consolidated operating revenues are in foreign currency?

(Please circle the response that is closest.)

- a. 0% b. 5% c. 10% d. 15% e. 20% f. 25% g. 30% h. 40% i. 50+%

- 7b. What percentage of your consolidated operating costs are in foreign currency?

(Please circle the response that is closest.)

- a. 0% b. 5% c. 10% d. 15% e. 20% f. 25% g. 30% h. 40% i. 50+%

8. Which benchmark does your firm use for evaluating foreign currency risk management over the budget/planning period? (Please circle the response that is appropriate.)

- Our firm does not use a benchmark
- Forward rates available at the beginning of the period
- Spot rates available at the beginning of the period
- Baseline percent hedged strategy (i.e. X% hedged)
- Other benchmark

If your firm does not use currency derivatives, please skip ahead to Section III.

9. How often does your firm transact in the currency derivatives markets to...
(Please circle the appropriate response for each exposure.)

	Not Applicable	Never	Sometimes	Frequently
Hedge foreign repatriations (dividends, royalties, investment payments)				
Hedge contractual commitments				
i. on-balance sheet transactions (accounts receivable/payable)				
ii. off-balance sheet transactions (unfilled or pending contracts)				
Hedge anticipated transactions one year or less				
Hedge anticipated transactions over one year				
Hedge economic/competitive exposure				
Hedge translation of foreign accounting statements				
Arbitrage borrowing rates across currencies (currency swaps in association with foreign currency borrowings)				

10. What percentage of the following categories of exposures do you typically hedge?
(Please indicate the appropriate percentage under each exposure category.)

Percentage of exposure typically hedged	On-balance Sheet Transactions	Off-balance Sheet Transactions	Anticipated Transactions 1 yr or less	Anticipated Transactions Over 1 yr	Economic/ Competitive Exposure	Foreign Repatriations	Translation of Foreign Accounts
>25% 25%-50% 50%-75% 75%- 100%							

11. For each of the following exposures, which best describes your typical hedging horizon?
(Please check the appropriate response for each column.)

Hedging Horizon	Contractual Commitments	Anticipated Transactions	Economic/ Competitive Exposure	Foreign Repatriations	Translation of Foreign Accounts
Hedge shorter than the maturity of the exposure					
Hedge the maturity of the exposure					
Hedge longer than the maturity of the exposure					
Hedge to the end of the current period (budget period or fiscal year)					

12. How often does your market view of exchange rates cause you to...

(Please check the appropriate response for each column.)

Never Sometimes Frequently

- a. Alter the timing of hedges
- b. Alter the size of hedges
- c. Actively take positions in currency derivatives

13. What percent of your total foreign currency derivatives (by face value of contracts) have the following original maturities: (Please enter the approximate percentage of currency hedging for each maturity.)

- 90 days or less
- 91 to 180 days
- 181 days to one year
- One year to three years
- Beyond three years

III. Interest Rate Exposure

14. Which statement(s) best describes the benchmark your firm uses for evaluating the management of the debt portfolio? (Circle all that apply.)

- a. Our firm does not use a benchmark for the debt portfolio
- b. The volatility of interest expense relative to a specified portfolio
- c. Realized cost of funds relative to a market index (e.g. Libor)
- d. Realized cost of funds relative to a portfolio with a specified duration
- e. Realized cost of funds relative to a portfolio with a specified ratio of fixed to floating rate debt
- f. Other benchmark (please describe)

If your firm does not use interest rate derivatives, please skip ahead to Section IV.

- 15a. How often does your firm transact in the interest rate derivatives market to...

(Please check the appropriate column for each row. Choose "Not Applicable" if a reason is not relevant to your firm.)

Not Applicable Never Sometimes Frequently

- a. Swap from fixed rate to floating rate debt
- b. Swap from floating rate to fixed rate debt
- c. Fix in advance the rate (spread) on new debt
- d. Reduce costs or lock-in rates based upon a market view

- 15b. How often does your market view of interest rates cause you to...

(Please check the appropriate response.)

Never Sometimes Frequently

- a. Alter the timing of hedges
 - b. Alter the size of hedges
 - c. Actively take positions in interest rate derivatives
-

IV. Option Contracts

16a. Please indicate which of the following types of option contracts your firm has used in the past months for the indicated exposures.
(Please check marks in the appropriate columns for each type of option, leave blank if options are not used.)

	Types of Exposure			
	FX	IR	CM	ANY
a. Standard European-style options				
b. Standard American-style options				
c. Average rate (price) options				
d. Basket options (options on two or more prices)				
e. Barrier options (knock-in/knock-out)				
f. Contingent premium (options with deferred or conditional premiums)				
g. Option combinations (i.e. collars, straddles, etc.)				
h. Other				

16b. If your firm does not use options, can you tell us why not?

V. Control and Reporting Procedures

17a. Does your firm have a documented policy with respect to the use of derivatives?
(Please circle the appropriate response.)

- a. Yes b. No

17b. How frequently is derivatives activity reported to the Board of Directors?
(Please circle the appropriate response.)

- a. Monthly b. Quarterly c. Annually d. As needed/No set schedule e. Other

18. What is the lowest rate counterparty with which you will enter a derivatives transaction?
(Please check the appropriate rating for each maturity.)

	AAA	AA	A	BBB	Less than BBB	No Set Policy/ Don't Know
a. Maturities 12 months or less						
b. Maturities more than 12 months						

19. How frequently do you value your derivatives portfolio?
(Please circle the appropriate answer.)

- | | |
|------------|------------------------------|
| a. Daily | d. Quarterly |
| b. Weekly | e. Annually |
| c. Monthly | f. As needed/No set schedule |

20. Rank your degree of reliance on each of the following for valuing your derivative positions.
(Please rank items; 1 – Most important; 3 – Least important; Use an "X" if a method is not used at all.)

	Rank 1	Rank 2	Rank 3
a. Dealer that originated the transaction			
b. Another dealer, consultant, or price vendor (e.g. Bloomberg)			
c. Internal source (e.g. software, spreadsheet, etc.)			

21. How do you evaluate the risk management function?

(Please circle the statement that best matches your practice.)

- a. Reduced volatility relative to a benchmark
- b. Increased profit (reduced costs) relative to a benchmark
- c. Absolute profit/loss
- d. Risk adjusted performance (profits or savings adjusted for volatility)

Thank you for completing the survey.
Please mail it today in the enclosed postage-paid envelope.

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